CLAIMS

What is claimed is:

1. A direct conversion receiver (DCR) comprising:

a pair of quadrature conversion paths, each of said quadrature conversion paths receiving an RF input signal and converting said RF input signal to a digital baseband signal, said each quadrature conversion path comprising:

a mixer mixing said RF input signal with a carrier phase signal,

an analog filter receiving a quadrature baseband signal from said multiplier and providing a filtered baseband signal,

an analog-to-digital converter (ADC) converting a quadrature baseband component to a digital baseband signal,

a 5^{th} order elliptical filter filtering said quadrature baseband component, and

a phase equalizer compensating for phase distortion arising in said analog filter; and

a baseband processor receiving quadrature digital baseband outputs from said pair of quadrature conversion paths and providing digital information therefrom.

2. A DCR as in claim 1 wherein each phase equalizer is a second order all pass digital phase equalizer.

3. A DCR as in claim 2 wherein the phase equalizer has a transfer function defined by

$$H_{eq}(z) = \frac{b_0 + b_1 z^{-1} + b_2 z^{-2}}{a_0 + a_1 z^{-1} + a_2 z^{-2}}$$

where a0=b2, a1=b1, a2=b0.

4. A DCR as in claim 3 wherein each 5^{th} order elliptical filter receives the digital output of the ADC and provides said digital baseband component to the phase equalizer.

5. A DCR as in claim 3 wherein each 5th order elliptical filter receives the filtered baseband signal from the analog filter and provides the quadrature baseband component to the ADC, the ADC output being provided to the phase equalizer.

6. A direct conversion receiver (DCR) comprising:

a pair of quadrature conversion paths, each of said quadrature conversion paths receiving an RF input signal and converting said RF input signal to a digital baseband signal, said each quadrature conversion path comprising:

a mixer mixing said RF input signal with a carrier phase signal,

an analog filter receiving a quadrature baseband signal from said multiplier and providing a filtered baseband signal,

an analog-to-digital converter (ADC) converting a quadrature baseband component to a digital baseband signal,

a 5th order elliptical digital filter receiving said quadrature baseband component and providing a filtered digital baseband component, and

a phase equalizer compensating said filtered digital baseband component for phase distortion arising in said analog filter; and

a baseband processor receiving quadrature digital baseband outputs from said pair of quadrature conversion paths and providing digital information therefrom.

7. A DCR as in claim 6 wherein each phase equalizer is a second order all pass digital phase equalizer.

8. A DCR as in claim 7 wherein the phase equalizer has a transfer function defined by

$$H_{eq}(z) = \frac{b_0 + b_1 z^{-1} + b_2 z^{-2}}{a_0 + a_1 z^{-1} + a_2 z^{-2}}$$

where a0=b2, a1=b1, a2=b0.

9. A direct conversion receiver (DCR) comprising:

a pair of quadrature conversion paths, each of said quadrature conversion paths receiving an RF input signal and converting said RF input signal to a digital baseband signal, said each quadrature conversion path comprising:

a mixer mixing said RF input signal with a carrier phase signal,

an analog filter receiving a quadrature baseband signal from said multiplier and providing a filtered baseband signal,

a 5^{th} order elliptical filter filtering said filtered baseband signal and providing a quadrature baseband component,

an analog-to-digital converter (ADC) converting said quadrature baseband component to a digital baseband signal, and

a phase equalizer compensating said digital baseband signal for phase distortion arising in said analog filter; and

a baseband processor receiving quadrature digital baseband outputs from said pair of quadrature conversion paths and providing digital information therefrom.

10. A DCR as in claim 9 wherein each phase equalizer is a second order all pass digital phase equalizer.

11. A DCR as in claim 10 wherein the phase equalizer has a transfer function defined by

$$H_{eq}(z) = \frac{b_0 + b_1 z^{-1} + b_2 z^{-2}}{a_0 + a_1 z^{-1} + a_2 z^{-2}}$$

where a0=b2, a1=b1, a2=b0.